Nebraska Severe Weather Awareness Week
March 25th - 29th, 2013

For most of the state, the exceptional drought which gripped the area in 2012 was something which will not soon be forgotten, although most of us wish we could. Even though we longed for rainfall last year, severe weather was still common place across the state. In fact, 44 tornadoes were reported last year, which is only 9 less than the 30-year average of 53. Hail the size of softballs (Hastings - May 2 and Coleridge - May 27), wind gusts over 80 mph (Blair - May 19) and even flash flooding were just some of the severe weather reports across the state in 2012.

As we move into spring 2013, the snow will melt and temperatures will warm. The feeling of spring will overcome us all as the first thunderstorms of the season rumble through the state. This is also the time we should prepare for what Mother Nature inevitably has in store for us each year: Severe Weather.

The National Weather Service has declared March 25th - 29th as Severe Weather Awareness Week in Nebraska. This week, and really the whole month, gives us the opportunity to review our severe weather plan, brush up on severe weather terms and actually participate in the statewide Tornado Warning drill on Wednesday, March 27th. No one knows for sure what kind of weather 2013 will bring, but if we don't take this opportunity to prepare, even for just a few minutes, it could cost us all in the end.

Weather-Ready Nation
National Oceanic and Atmospheric Administration

All the National Weather Services offices serving Nebraska encourage you to be an active participant in this year's Severe Weather Awareness Week. In recent years, our nation has experienced multiple tornado events which have impacted highly populated areas (Joplin, MO, Birmingham, AL, etc.). Do you think the residents of those communities won't be ready for the next tornado? You can bet they will be ready. Don't let disaster strike before you are ready. Use 2013 Severe Weather Awareness Week to make sure your area is "Weather-Ready" for whatever lies ahead.

Find us on Facebook

With social media having grown tremendously over the last few years, each National Weather Service office strives to have a strong presence on both Facebook and Twitter. If you would like to follow us on either, it is easy to do, just go to the homepage of the office you want to follow and click on both logos in the upper left hand corner of the page.

It is important to note that Facebook and Twitter are not the main channels for NWS products, it is a way to connect with our customers. We encourage you to post comments and photos of weather related events, and if you have questions, go ahead and ask away! Storm reports are more than welcome on our page, and fans can see other reports across the area as well.

Tornado Safety Drill

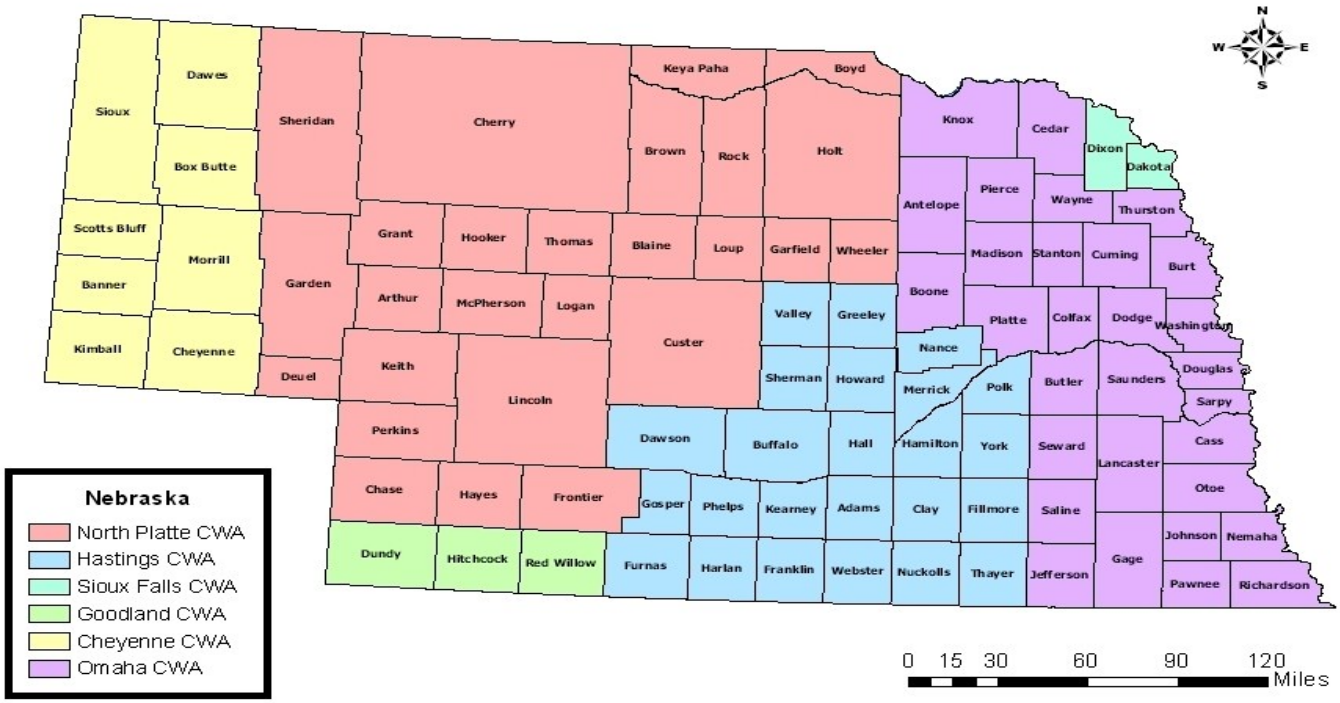
Between
10 a.m. & 11 a.m. CDT
9 a.m. & 10 a.m. MDT

WHAT'S INSIDE?

National Weather Service Offices Serving Nebraska

Severe Weather Awareness Week - March 25th - 29th

National Weather Service Coverage Area



Far West	West and North Central	Far Southwest
National Weather Service 1301 Airport Parkway Cheyenne, Wyoming 82001 (307) 772-2468 **http://www.weather.gov/cys**	National Weather Service 5250 E. Lee Bird Drive North Platte, Nebraska 69101 (308) 532-4936 **http://www.weather.gov/lbf**	National Weather Service 920 Armory Road Goodland, Kansas 67735 (785) 899-7119 **http://www.weather.gov/gld**
South Central	**East**	**Far Northeast**
National Weather Service 6365 North Osborne Drive West Hastings, Nebraska 68901 (402) 462-4287 **http://www.weather.gov/gid**	National Weather Service 6707 North 288th Street Valley, Nebraska 68064 (402) 359-5166 **http://www.weather.gov/oax**	National Weather Service 26 Weather Lane Sioux Falls, South Dakota 57104 (605) 330-4247 **http://www.weather.gov/fsd**

2012 Nebraska Tornado Facts

Severe Weather Awareness Week - March 25th - 29th

Tornadoes: 44 (2 above the 1950-2012 average of 42 & 9 below the 30 year average of 53)

Deaths: 0 **Injuries**: 5 (April 14th in Lincoln County near North Platte)

Longest Track: 15.14 miles (April 14th - Lincoln County - 7.3 NW Wellfleet to 12.7 SW Brady)

Greatest Width: 440 yards or 1/4 of a mile (April 14th - Johnson County near Cook)

Strongest: EF3 (2 - March 18th - Lincoln County near North Platte)

Most in a county: 12 (Lincoln County)

Days of occurrence (Days with 1 or more tornadoes): 13

Most in one day: 19 (April 14th)

Most active hour of the day: 14 tornadoes from 4-5 p.m. CST / 3-4 p.m. MST

Most in one month: 25 (April) **Highest April tornado total since records started in1950**

First tornado of the year: February 28th (EF0 - Lincoln/Logan County near Stapleton
Greeley County near Greeley)

Last tornado of the year: September 30th (EF0 - Custer County near Arnold)

Tornado 4 miles north-northeast of Oxford, NE on April 14th. (Courtesy of Trevor Tetley)

2012 Monthly Tornado Totals

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Total	0	2	6	25	6	1	2	1	1	0	0	0	44	100%
EF5	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
EF4	0	0	0	0	0	0	0	0	0	0	0	0	0	0%
EF3	0	0	2	0	0	0	0	0	0	0	0	0	2	5%
EF2	0	0	1	1	1	0	0	0	0	0	0	0	3	7%
EF1	0	0	1	3	1	0	0	0	0	0	0	0	5	11%
EF0	0	2	2	21	4	1	2	1	1	0	0	0	34	77%

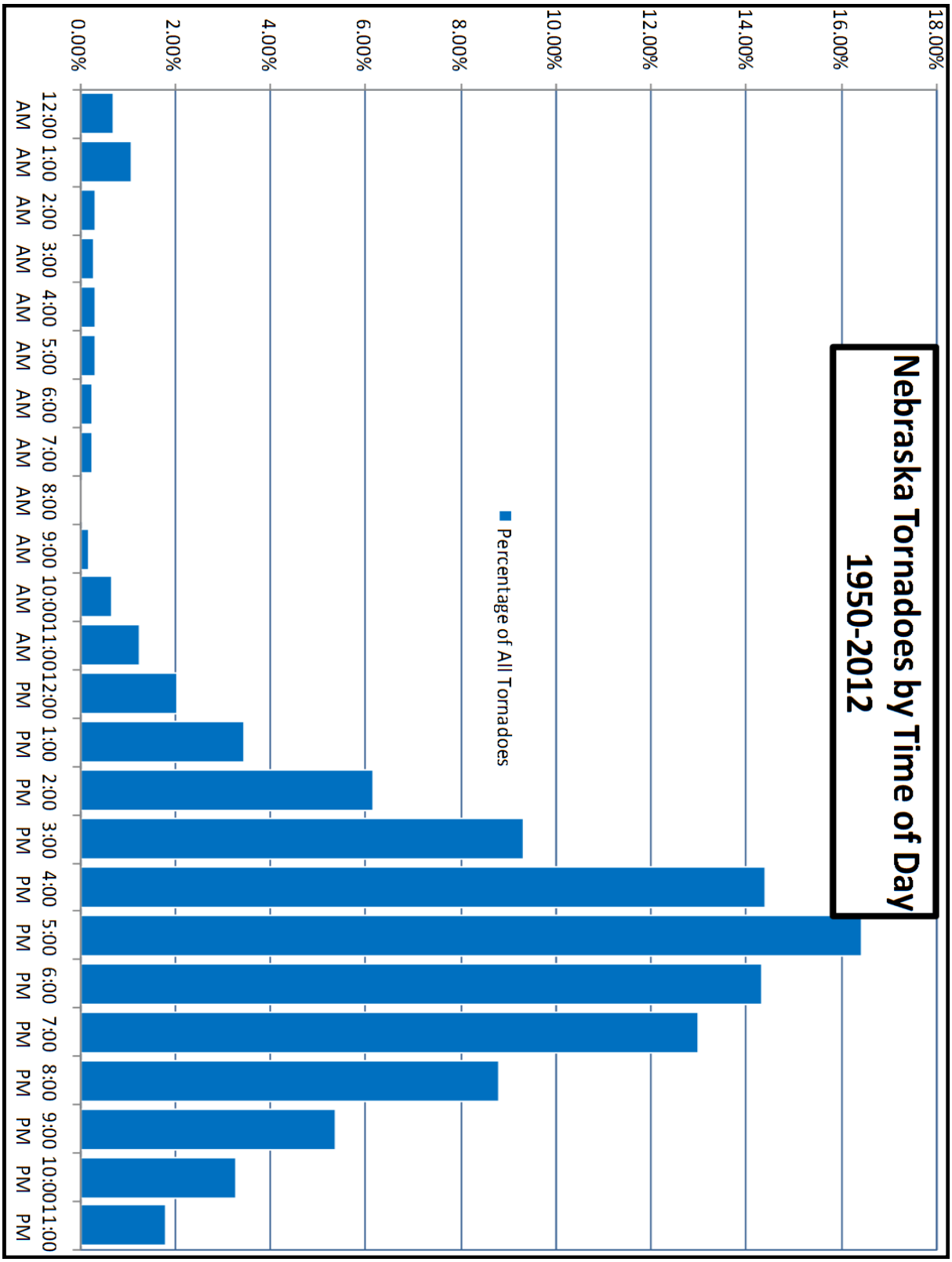
2012 Season Peak…

Hail Size - 4.25" (Softball size) on May 2nd - Hastings (Adams County)
May 27th - near Coleridge (Cedar County)

Wind Gust - Estimated: 80 mph on April 6th near Alliance (Box Butte County), April 24th near Roscoe (Keith County) and June 22nd in/near Broken Bow (Custer County)
Measured: 81 mph on May 19th near Blair (Washington County)

Nebraska
Tornado Facts

Severe Weather Awareness Week - March 25th - 29th



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Tornado Facts

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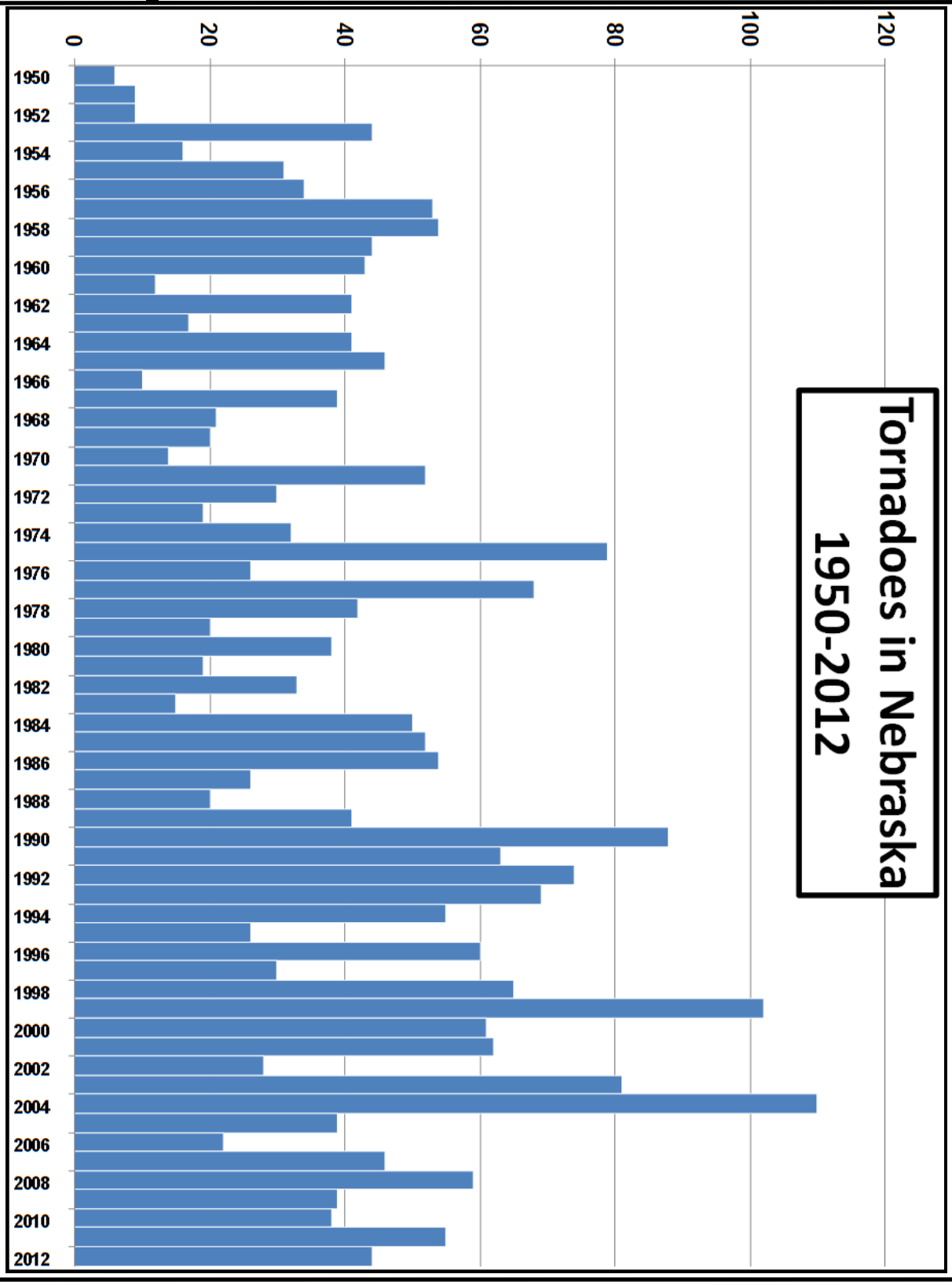

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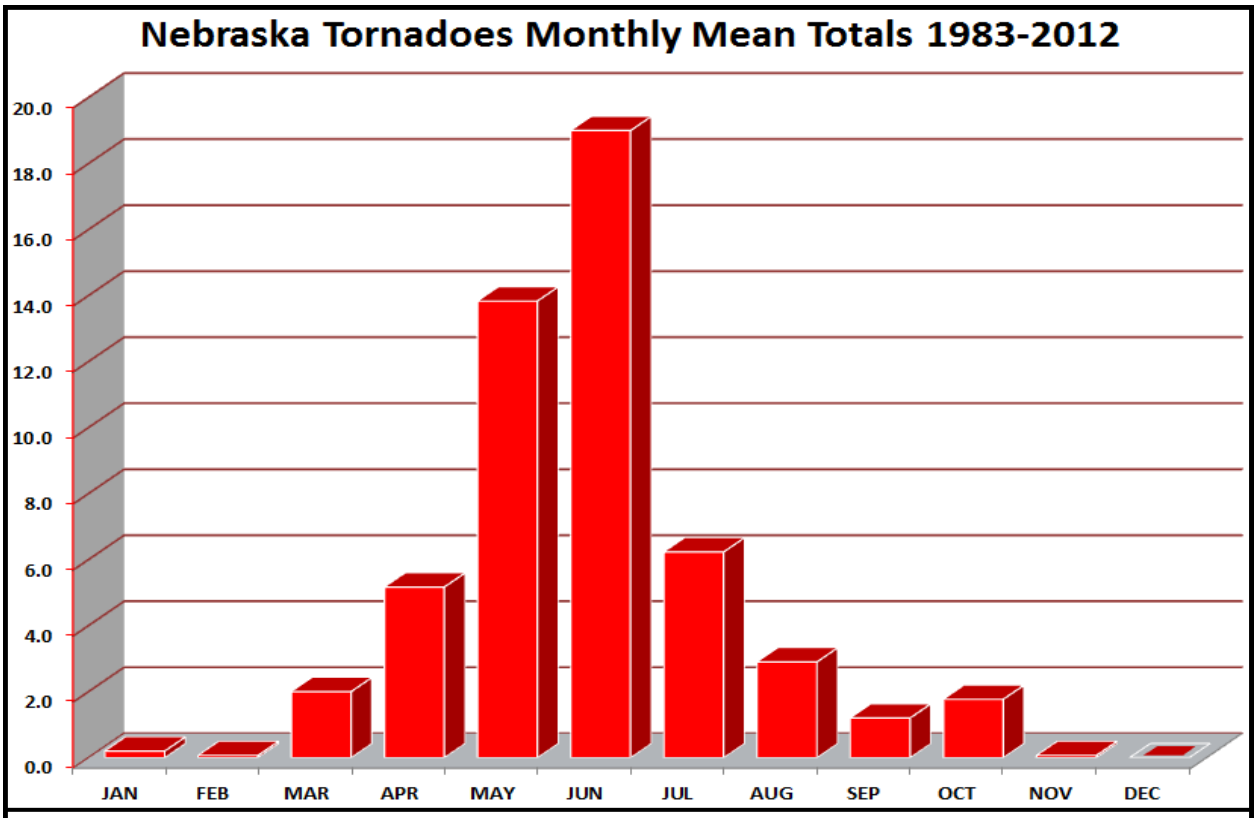
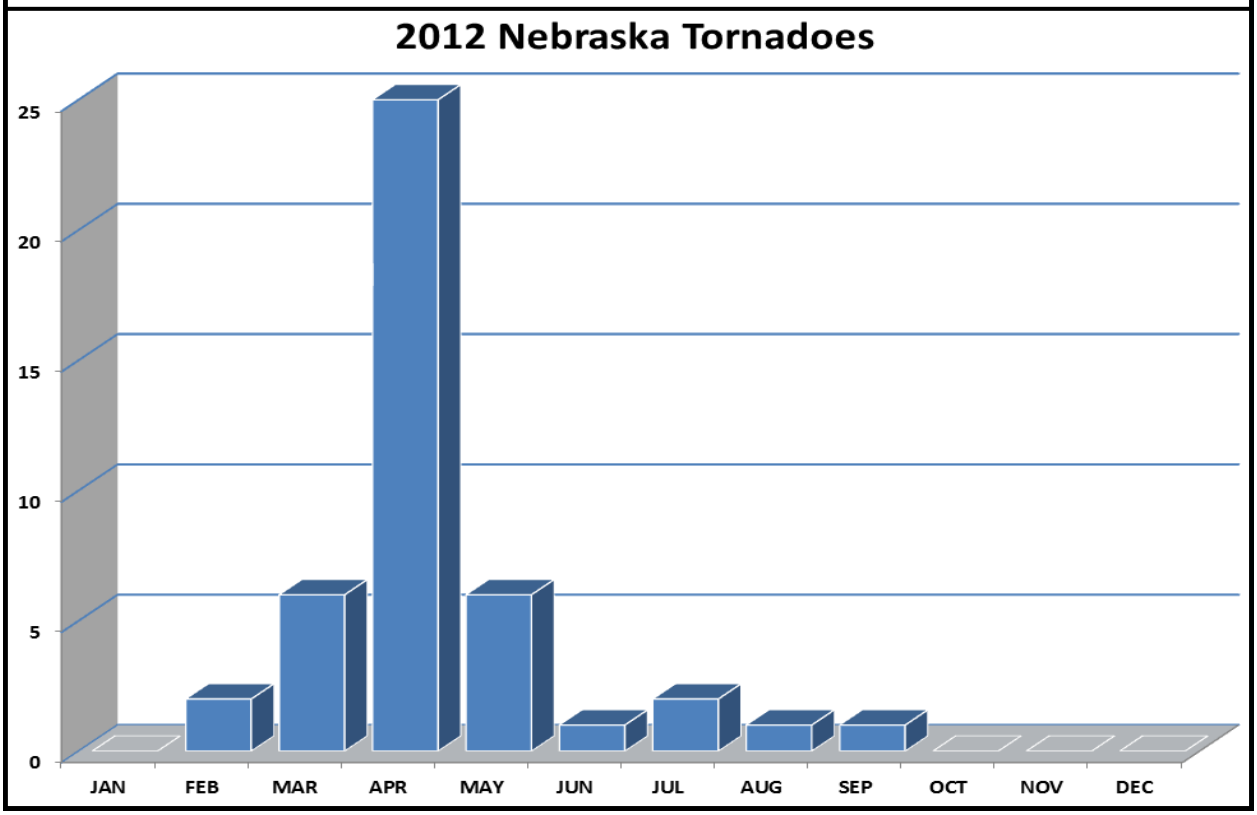




Weather-Ready Nation

http://www.nws.noaa.gov/com/weatherreadynation/

NOAA's Weather-Ready Nation is about building community resilience in the face of increasing vulnerability to extreme weather and water events. Record-breaking snowfall, cold temperatures, extended drought, high heat, severe flooding, violent tornadoes, and massive hurricanes have all combined to reach the greatest number of multi-billion dollar weather disasters in the nation's history.

The devastating impacts of extreme events can be reduced through improved readiness, which is why the Weather-Ready Nation initiative is so important. Through operational initiatives, NOAA's National Weather Service is transforming its operations to help America respond. In the end, emergency managers, first responders, government officials, businesses and the public will be empowered to make fast, smart decisions to save lives and livelihoods.

The initiative includes improvements in a wide range of areas to support management of the nation's water supply, understanding of climate-related risks, economic productivity, healthy communities and ecosystems. Building on past successes in decision support services, the NWS is launching community-based pilot projects across the country, ranging in focus from emergency response to integrated environmental services, to enhance the nation's preparedness. NOAA's Office of Oceanic and Atmospheric Research and National Environmental Satellite, Data, and Information Service are moving new science and technology into weather service operations that will improve forecasts, increase lead time and ultimately increase weather-readiness.

Building a Weather-Ready Nation starts with these internal actions, but requires the action of a vast nationwide network of partners including other government agencies and emergency managers, researchers, the media, insurance industry, non-profits, the private sector, and more. Through a series of symposiums, the national dialog engages these partners in assessing why the nation is experiencing such extreme impacts. The goal of the dialog is to support the mission of the NWS by reducing risk and increasing community resilience for future extreme events. All of these actions fall under the umbrella of Weather-Ready Nation, and all support the same end goal: ***better information for better decisions.***

Visit the website listed above for more information on how you can become Weather-Ready!

A Few Frequently Asked Questions:

Who is involved in Weather-Ready Nation?

Society's ability to prepare for natural disasters requires a societal response equal to the risk. Government cannot do this alone, which is why the NWS is leveraging its vast nationwide network of partners, and incorporating new partners who are beginning to share the vision of building a Weather-Ready Nation. Partners include other government agencies and emergency managers, researchers, the media, insurance industry, non-profits, the private sector and more.

Why is America becoming increasingly vulnerable to weather events?

The continued increase in the severity of impacts is attributable to societal changes represented in demographic trends, growing infrastructure threats, and an increased reliance on technology. U.S. population has almost doubled since 1954, which corresponds with higher property and infrastructure values. Trends such as urban sprawl and conversion of rural land to suburban landscapes increase the likelihood a tornado will impact densely populated areas.

The increased dependence on technology by both forecasters and the general public requires investments for regular updates, replacements and repairs.

More overlap in the U.S. economy means that a single weather event can have a significant effect on several industries. In fact, according to a study by the National Center for Atmospheric Research, weather can vary the economic output in the U.S. by $485 billion of the country's GDP annually. The study goes on to say that weather events affect "economic activity in every state and every sector."

Severe Weather Terminology

Severe Weather Awareness Week - March 25th - 29th

SEVERE THUNDERSTORM - A thunderstorm is considered severe when it produces any of the following: Hail 1" (quarter size) or larger in diameter, winds which equal or exceed 58 MPH or a tornado.

FUNNEL CLOUD - A funnel shaped cloud, usually extending from a convective cloud, which is associated with a violently rotating column of air that is NOT in contact with the ground.

TORNADO - A violently rotating column of air that extends from a convective cloud and is in contact with the ground. The entire column of air associated with a tornado is not always visible. A tornado may only be visible once it has picked up enough dirt and debris.

HAZARDOUS WEATHER OUTLOOK - A product which is issued daily, highlighting any potential significant weather in the area for the next 7 days.

WATCH - Issued when conditions are favorable for the development of severe weather in and close to the watch area. The size of the watch can vary depending on the weather situation and is usually issued for a duration of 4 to 8 hours. During the watch, people should review severe weather safety rules and be prepared to move to a place of safety if threatening weather approaches.

WARNING - Issued when severe weather is detected by radar or reported by storm spotters. Information in this warning will include the location of the storm, what areas will be affected, and the primary threat associated with the storm. People in the affected area should seek safe shelter immediately. Remember that severe thunderstorms can produce tornadoes with little or no advance warning. Warnings can be issued without a watch already in effect.

SIGNIFICANT WEATHER ADVISORY or SPECIAL WEATHER STATEMENT - Issued for "near" severe thunderstorms. Typically issued for storms with 3/4" (penny sized) hail and wind gusts near 50 MPH, but can also be issued for large amounts of small hail covering the ground. It is also used as a "heads up" for ongoing severe storms which may move into the area.

SEVERE WEATHER STATEMENT - A product issued which provides follow-up information on any severe weather warnings in effect and conditions which have occurred or are occurring. This information includes updated storm paths and any storm reports, such as hail size or damage, received from spotters.

FLASH FLOOD - A rapid rise in water that occurs with little or no advanced warning, usually as the result of intense rainfall over a relatively small area in a short amount of time. Flash Floods can also be caused by dam or levee failures, ice jams, and topography.

FLASH FLOOD WATCH - Issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area. When a watch is issued, be aware of any potential flood hazards. Those in the affected area are urged to be ready to take quick action if a Flash Flood Warning is issued or flooding is observed.

FLASH FLOOD WARNING - Issued when flash flooding is in progress, imminent, or highly likely. Those in the affected area should evacuate immediately or move to higher ground if possible. Information in this warning will include the locations in the flood and any areas which may be impacted. Flash Flood Warnings can be issued without a Flash Flood Watch in effect.

Lightning Safety

http://www.lightningsafety.noaa.gov

One dangerous aspect of weather that sometimes is not taken as seriously as others is lightning. Summer is the peak season for one of the nation's deadliest weather phenomena, but don't be fooled, lightning strikes happen at all times of the year. In the United States, an average of 54 people are killed each year by lightning. In 2011, 26 people died due to lightning. In 2012, 28 people were struck and killed, while hundreds of others were permanently injured. Of the victims who were killed by lightning in 2012:

- 100% were outside
- 89% were male
- 58% were between the ages of 10 - 49
- 32% were between the ages of 50 - 69
- 46% were near or under a tree
- 25% were in or near water

When Thunder Roars, Go Indoors!

The reported number of injuries is likely far lower than the actual total because many people do not seek help or doctors do not record it as a lightning injury. People struck by lightning suffer from a variety of long-term, debilitating symptoms, including memory loss, attention deficits, sleep disorders, and numbness.

Avoid getting caught in a dangerous situation!
If you can hear thunder, you are close enough to be struck by lightning!

- Move into a sturdy building or an automobile with a metal top. The frame of the building or of a metal car body will allow the charge to be conducted away from you.

- Outdoor activities such as golfing and baseball can present a risk to those in attendance, as these take place on a fairway or ball field, both of which are wide open. Those attending rodeos or concerts in open arenas, sitting on metal bleachers or under a metal overhang, are also at risk.

- Get out of boats and away from water, as water is an electrical conductor. On the open water, you may become the tallest object and a prime target.

- When indoors, avoid using any corded and electrical appliances. Also stay away from pools, tubs, showers, or any other plumbing. Electricity can travel through wiring and plumbing, posing a risk to those in contact.

- If someone is struck by lightning, get medical help immediately. With proper treatment, including CPR if necessary, most lightning victims survive.

Did you know…

Thunderstorms do not have to be large in size or even severe to create potentially fatal lightning strikes!

As a thunderstorm grows, areas of rising and descending air cause a separation of positively and negatively charged particles within the storm. At the same time, oppositely charged particles are gathering on the ground below. The attraction between the particles in the cloud and at the ground quickly grows, and once the force is strong enough to overcome the air's resistance, lightning occurs.

Flash Flood Safety

http://www.floodsafety.noaa.gov

On average, more people are killed by flooding than by any other single severe weather hazard, including tornadoes, lightning, and hurricanes. Most of these deaths occur at night, when it is more difficult to recognize flood dangers, and when people are trapped in vehicles. Do you and your family know what to do in case of a flood?

Remember…

- **DO NOT** drive onto a flooded roadway.
- **DO NOT** drive through flowing water.
- If you approach a roadway that is flooded, **TURN AROUND - DON'T DROWN**.
- Drive with extreme caution if roads are even just wet or it is raining. You can lose control of your vehicle if hydroplaning occurs, which is when a layer of water builds up between your tires and the road, causing there to be no direct contact between your vehicle and the road.

If a Flash Flood Warning is issued for your area…

- **If advised to evacuate, do so *immediately*!** Act quickly to save yourself, you may not have much time.
- Get out of areas that are subject to flooding and move to a safe area before access is cut off by flood waters. Low spots such as dips, canyons, and washes are not the places you want to be during flooding!
- **DO NOT** camp or park your vehicle along streams and washes, particularly during threatening conditions.
- **DO NOT** drive if not necessary. If driving is necessary, do not attempt to drive over a flooded road, as the depth of the water is not always obvious, and the roadway may no longer be intact under the water. Never drive around a barricade, they are placed there for your protection! If your vehicle stalls, leave it immediately and move to higher ground before water sweeps you and your vehicle away.
- **DO NOT** try to walk, swim, or play in flood water. You may not be able to determine if there are holes or submerged debris, or how quickly the water is flowing, and you may be swept away. If water is moving swiftly, as little as 6 inches of water can knock you off of your feet! There is also a danger of hazardous materials polluting the water. Also remember that water is an electrical conductor, if there are power lines down, there is a threat of electrocution.
- Always continue to monitor the situation through the National Weather Service website, your NOAA Weather Radio All-Hazards, or favorite local television or radio stations.

Why is "Turn Around - Don't Drown" so important?

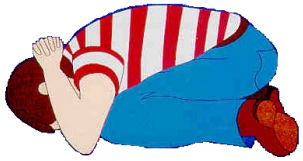
On average, more deaths occur due to flooding than from any other severe weather related hazard. The main reason is people underestimate the force and power of water. More than half of all flood related deaths result from vehicles being swept downstream. Of these, many are preventable.

Tornado Safety

Severe Weather Awareness Week - March 25th - 29th

Tornadoes can happen at any time of the year, and at any time during the day or night. Though more common in the afternoon and evening hours, tornadoes can happen and have been reported at 2 or 3 o'clock in the morning! Many people think a tornado is always visible, but there are times in storms which have high amounts of precipitation, it can be completely wrapped in rain, making it indistinguishable from surrounding clouds. Contrary to what some may believe, tornadoes can and do cross rivers, mountains, and big cities. For these reasons, it is very important to have a plan of action in case of a tornado.

What should I do when a tornado is approaching or a warning has been issued?



- **SEEK SHELTER *IMMEDIATELY!* Once in shelter, take the protection position.**

Where do I go?

- **Reinforced shelters** – A basement or underground shelter is the best option. Protect your head and eyes from deadly flying debris. If no basement is available, go to an interior area on the lowest floor, such as a bathroom or closet. If possible get under something sturdy like a bench or table. ***Always stay away from windows!***

What should I do if I am located...

- **Outdoors** – If you can drive away from the tornado, do so. On average, tornadoes move at 35 - 45 MPH, so driving away would be the first course of action.

  If you can't drive away from the tornado, as would be the case if you were driving directly toward the tornado on a divided highway or were stuck in slow moving traffic, abandon your vehicle and seek shelter in a nearby structure, such as a house or other well built structure.

  If no buildings are available and driving away is not an option: Stay in the car with the seat belt on. Put your head down below the windows, covering with your hands and a blanket if possible. If you can safely get noticeably lower than the level of the roadway, exit your car and lie in that area, covering your head with your hands. **NEVER** seek shelter under a bridge or overpass.

  The important thing to understand is that if you find yourself outside or in a car and you are unable to get to a safe shelter, you are at risk from a number of things outside your control, such as the strength and path of the tornado and debris from your surroundings. This is the case whether you stay in your car or seek shelter in a depression or ditch, both of which are considered last resort options that provide little protection. The safest place to be is always an underground shelter, basement or safe room.

- **In a Mobile Home** – Evacuate immediately! Mobile homes are particularly vulnerable to overturning and destruction from strong winds and tornadoes. Tie-downs generally will not protect a mobile home from tornadoes. If possible, leave the mobile home and go to a community shelter. If none is available, a ditch, culvert, or other low lying area may offer better protection. Have a plan of action prepared before a storm hits.

- **At School, Work, Shopping or in Other Buildings** – Stay indoors! Avoid cars, buses, or any other vehicle. Follow plans made in advance to go to a basement, an interior room or hallway on the lowest floor. Avoid the end of any hallway that opens to the outside as well as rooms with windows or outside walls. Stay out of auditoriums or any other structure with wide free-span roofs, as these types of structures are quite vulnerable to tornadic winds. Once you are in shelter, crouch down and cover your head!

NOAA Weather Radio
All Hazards

http://www.weather.gov/nwr

NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service office. NWR broadcasts official Weather Service warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week.

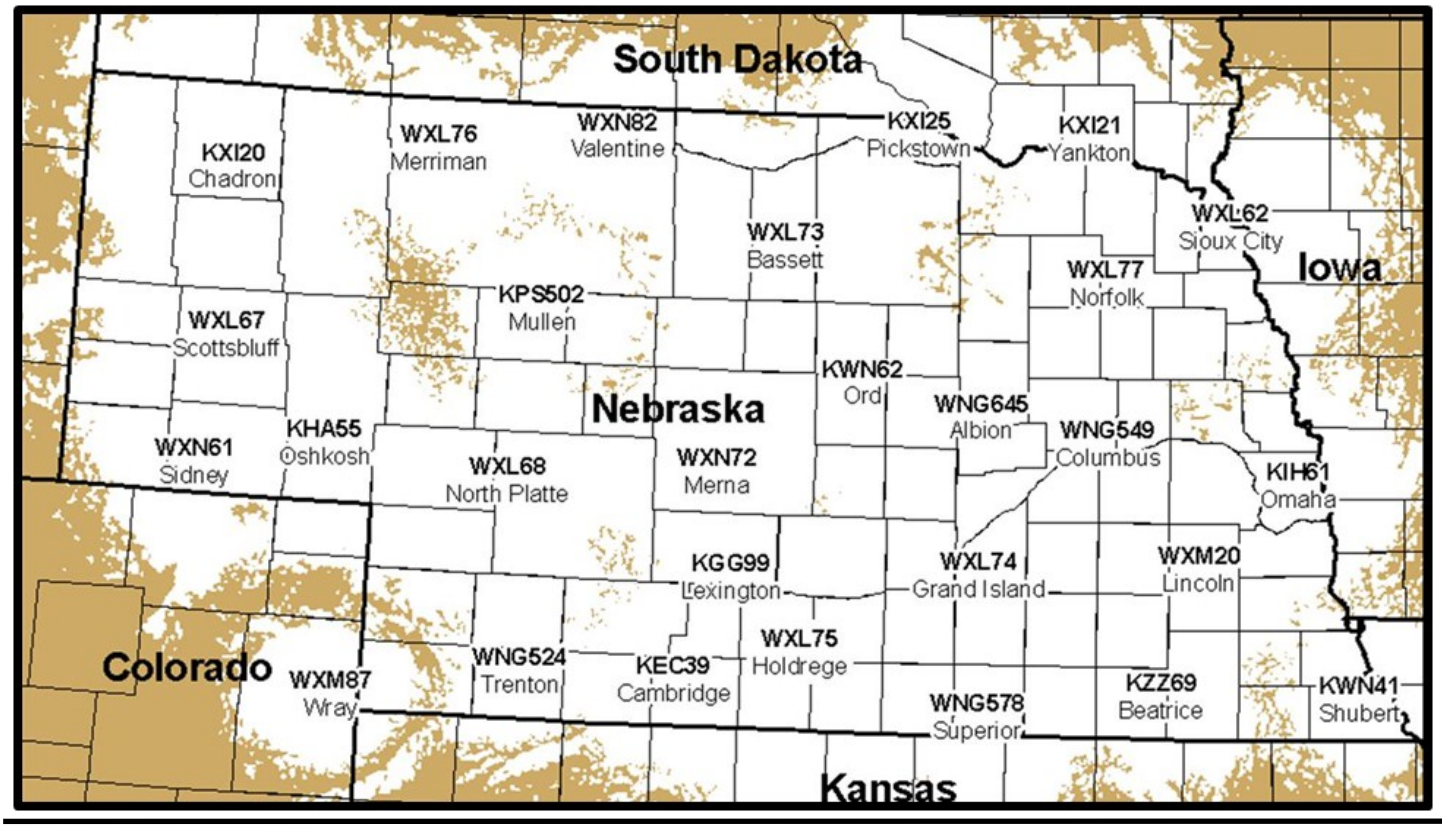
Working with the Federal Communication Commission's (FCC) Emergency Alert System, NWR is an "All Hazards" radio network, making it your single source for comprehensive weather and emergency information. In conjunction with Federal, State, and Local Emergency Managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards, including natural (such as tornadoes or floods), environmental (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 911 Telephone outages).

Known as the "Voice of NOAA's National Weather Service," NWR is provided as a public service by the National Oceanic and Atmospheric Administration (NOAA). NWR includes 1000 transmitters, covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific Territories. NWR requires a special radio receiver or scanner capable of picking up the signal. Broadcasts are found in the VHF public service band at these seven frequencies (MHz):

162.400	162.425	162.450	162.475	162.500	162.525	162.550

Coverage information and SAME Codes for every county in Nebraska can be found at:

http://www.weather.gov/nwr/Maps/PHP/nebraska.php



2012 Nebraska Severe Weather Summary

http://www.weather.gov/cys

Nebraska Panhandle - NWS Cheyenne, WY

Severe weather across the eight western counties of the Nebraska Panhandle was very suppressed this last season. To say the least, this was one of the quietest seasons in recent memory. There were only a total of 12 days with severe convective weather reports, or roughly a third of the average amount given a rough calculation. Furthermore, of those 12 days, 8 consisted of just 1 lone report of severe weather!

Only one "tornado" was reported during the season. That was on **June 22nd** when a brief landspout was reported southwest of Sidney, in an open area causing no damage. The most significant day as far as damaging weather was on **June 19th** when hail up to 2 inches in diameter caused widespread damage in the Scottsbluff/Gering area. Of particular note, this day was the last of 5 total days with large hail reported over the western Nebraska Panhandle. No further large hail reports were received over that area after June 19th! Very unusual.

The first severe weather report of the season was of downburst winds in the Alliance area on **April 6th**, somewhat early for the start of the season. It was not a indicator of the rest of the season though. There were two days of severe weather in April, 2 in May, 4 in June, 3 in July, and 1 in August; that being another lone wind report near Scottsbluff on the 6th to close out the season. The 3 days in July and the 1 in August each consisted of 1 lone wind report! Basically, the season was pretty much over after June 19th, which is usually only about the halfway point.

The drought conditions obviously played a major role in the very limited season as moisture was hard to come by. Atmospheric shear was also limited for much of the season which also contributed to the lack of severe weather during the summer.

Are you a *Storm*Ready Community?

Americans live in the most severe weather-prone country on Earth. Each year, Americans cope with an average of 10,000 severe thunderstorms, 5,000 floods, 1,000 tornadoes, and an average of 2 land falling deadly hurricanes. Add this on top of winter storms, intense summer heat, high winds, wild fires and other deadly weather impacts. You can make sure your community is ready for the weather with the National Weather Service's StormReady program.

Some 90% of all presidentially declared disasters are weather related, leading to around 500 deaths per year and nearly $14 billion in damage. StormReady, a program started in 1999 in Tulsa, OK, helps arm America's communities with the communication and safety skills needed to save lives and property–before and during the event. StormReady helps community leaders and emergency managers strengthen local safety programs.

StormReady is a nationwide community preparedness program that uses a grassroots approach to help communities develop plans to handle all types of severe weather—from tornadoes to tsunamis. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations.

For more information, visit: ***http://www.stormready.noaa.gov/***

2012 Nebraska Severe Weather Summary

http://www.weather.gov/gld

Far Southwestern Nebraska - NWS Goodland, KS

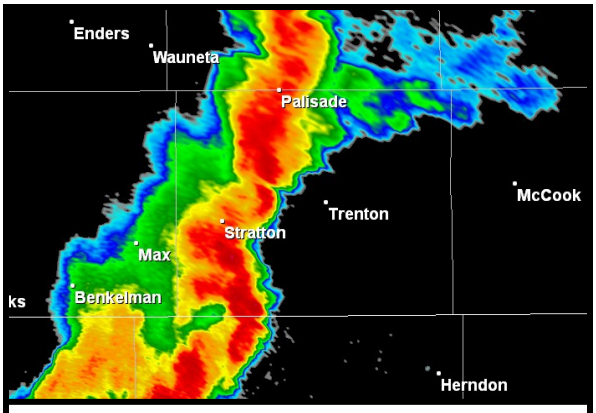
In southwest Nebraska, the year 2012 will likely be remembered for its lack of snow, unusual warmth in March, a string of 100 degree days in June and July, and the lack of summer rainfall. Severe weather was limited to just 9 days in 2012, thanks to a persistent ridge of high pressure aloft which intensified in late June. No severe weather was reported in July or August across Dundy, Hitchcock and Red Willow counties.

The year began with several wind events in January, the most noteworthy occurring on **January 22nd** when a strong cold front roared through the area followed by wind gusts to 61 mph at McCook. In Trenton, the strong wind damaged a gas station canopy.

The first significant snow of 2012 fell on **February 3rd** when a large winter storm moved from the Central Rockies out into the High Plains. Snow began on the evening of the 2nd and continued the following day. The greatest snow amounts occurred in far northwest Dundy county where observers reported 8 inches. Elsewhere, 3 - 5 inches fell over the remainder of the county east to McCook. Later that month on the **20th** a weather system brought 1 - 3 inches of snow, which when combined with strong winds, created near blizzard conditions for a time over Dundy county.

The big weather story in March was the early arrival of unusual warmth. McCook smashed its old temperature record for the month with an average temperature of 52 degrees, which was 12.6 degrees above the normal mean March temperature of 39.4° F. Other stations also had impressive readings: Benkelman 10.2° F above normal, Trenton 12.0° F above normal and Culbertson 10.7° F above normal.

McCook, Nebraska Warmest Marches	
Temperature	Year
52.0° F	2012
48.3° F	2007
46.7° F	1967
46.7° F	1946
46.4° F	1911



April 12th radar reflectivity associated with evening severe thunderstorms.

The **12th** of the month was the only day in April with severe weather in southwest Nebraska. A line of severe thunderstorms developed during the evening and moved east. Hail to the size of tennis balls, wind gusts to 60 mph and a brief tornado were reported. The largest hail fell in Hitchcock county near Trenton and Swanson Lake with hail diameters of 2.0" and 2.5" observed. A brief tornado lasting around 30 seconds was observed over open fields 2 miles northwest of Trenton at 7:45 p.m.

May brought three days with limited severe weather episodes. On the **19th**, storms formed early in the day in eastern Colorado and moved into southwest Nebraska around noon. Hail to the size of golf balls fell north of Max and in Stratton.

On the **26th**, outflow from thunderstorms combined with already brisk winds in the area to generate gusts to 65 mph in the late evening and early overnight hours across Hitchcock and Red Willow counties. Finally on the **30th**, a cluster of thunderstorms moved into southwest Nebraska in the late afternoon producing hail to the size of quarters near Perry in Red Willow county.

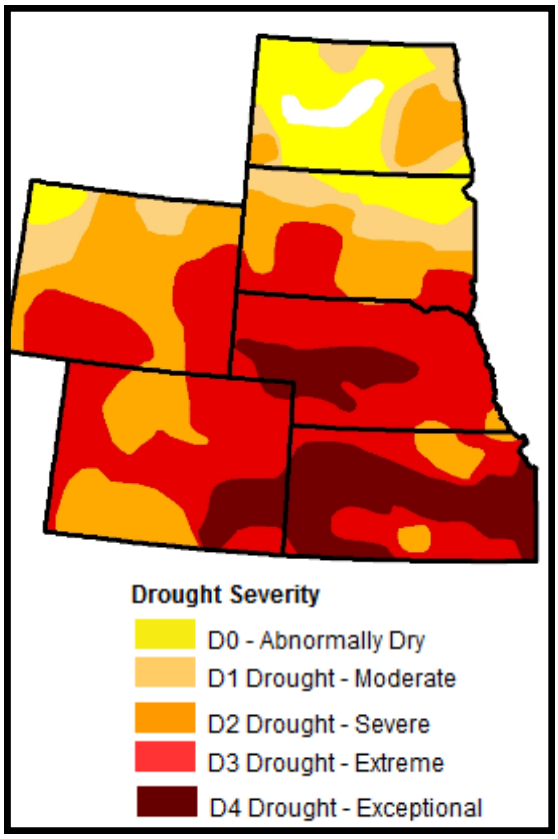
2012 Nebraska Severe Weather Summary

http://www.weather.gov/gld

Far Southwestern Nebraska - NWS Goodland, KS Con't.

The major weather story for June transitioned from severe weather to heat and developing drought conditions. While severe storms occurred on five separate days in June, there were fewer storm reports overall compared to May, and many of the reports were marginally severe with wind gusts to 60 mph and hail slightly larger than quarter size.

In 2012, McCook set a new record for the number of days with maximum temperatures 100 degrees or higher with 38, breaking the old record of 37 set back in 1936. Twelve of these occurred in June with 16 in July. It was during this time that the combination of hot weather and consistently below normal rainfall began to take its toll on warm season crops, with drought conditions rapidly developing. By the end of August, Extreme to Exceptional Drought conditions had developed across much of the Central Plains as shown in the map at right. These conditions persisted through the end of the year.



September 30th brought the first episode of severe thunderstorms in over 2 months with several reports of hail. The largest was golf ball size near Culbertson around 8:30 p.m. in the evening.

In October, fall weather returned on the **3rd** with the passage of a strong cold front which raced south during the evening. Winds gusted over 50 mph with frontal passage, resulting in downed power lines east of Benkelman which ultimately started a small grass fire. A few days later, fall turned to winter across Dundy county when a band of heavy snow developed on the **6th**, with eight inches falling just northwest if Benkelman.

After a quiet November and early December, blizzard conditions developed on **December 19th** over northwest Kansas and southwest Nebraska. Strong winds over 50 mph combined with falling and blowing snow producing near whiteout conditions over Dundy, Hitchcock and Red Willow counties resulting in the closure of area roads.

Did you know?

- The average tornado moves from southwest to northeast, but have been known to move in any direction. Its average forward speed is 35 - 45 mph, but may vary from nearly stationary to 70 mph! Tornadoes are most likely to occur between 3 & 9 p.m., but have been reported at all hours of the day or night.
- Lightning can occur from cloud-to-cloud, within a cloud, cloud-to-ground, or cloud-to-air.
- A downburst is a small area of rapidly descending air beneath a thunderstorm. Once this air hits the ground, it spreads out, causing potentially damaging straight-line winds. Downbursts present an extreme danger to aviation.
- Large hail stones can fall at speeds greater than 100 miles per hour.
- The largest hailstone ever recorded in the United States fell in Vivian, South Dakota, on July 23, 2010. This hailstone had a 8 inch diameter and weighed 1.94 lbs.

2012 Nebraska Severe Weather Summary

http://www.weather.gov/lbf

Western & North Central Nebraska - NWS North Platte, NE

The 2012 convective season arrived early in western Nebraska as a powerful late winter storm system produced a myriad of weather, including the first confirmed tornado during the month of February in Nebraska. Officially, there were six tornado days and 19 confirmed tornadoes, with the greatest occurrence on April 14th. On that date 7 tornadoes occurred and were rated EF0 on the Enhanced Fujita Scale. However, tornadoes that occurred on March 18th, produced the greatest damage. A lone supercell produced four tornadoes which tracked north a few miles to the west of the city of North Platte. Two tornadoes were rated EF3 and produced significant damage. The tornado threat decreased by June as temperatures climbed and scarce moisture led to a number of days favorable for high based thunderstorms. The high based thunderstorms yielded more hail, the largest the size of baseballs and some damaging winds. Yet, it was lightning strikes associated with the storms that sparked numerous wildfires. The fire threat grew into the fall season as an exceptional drought set in.

Photo courtesy of Bob Denny

February 28th - A Nebraska Record. A tornado touched down at 4:13 p.m. 21 miles northeast of North Platte. The tornado moved northeast intermittently on the ground for six minutes, where Bob Denny captured the tornado moving across County Line Road from Lincoln County into Logan County (shown left). The tornado path was over open rangeland and harvested cropland, although some tree damage occurred and a center pivot irrigation system was overturned prior to the tornado dissipating 4 miles southwest of Stapleton. The tornado path was three miles and was rated an EF0 on the Enhanced Fujita Scale.

March 18th - Sirens blared in the city of North Platte as an isolated supercell thunderstorm developed in the evening and moved north producing 4 confirmed tornadoes in central Lincoln County. The tornadoes cut a 13 mile path of damage just a few miles west of town with two rated EF3, one EF1 and an EF0. That night, two more tornadoes were confirmed to include an EF0 tornado in southeastern McPherson County near Ringgold. Farther north in eastern Cherry County, the final tornado of the night briefly touched down to the north of Valentine, with no visible damage and was rated an EF0.

NWS images of EF3 storm damage on March 18th

2012 Nebraska Severe Weather Summary

http://www.weather.gov/lbf

Western & North Central Nebraska - NWS North Platte, NE Con't.

In April, there were two tornado days that produced a total of nine tornadoes. On **April 14th**, a strong upper level low pressure system moved out onto the plains. As a warm front lifted north, thunderstorms initiated along the dryline over southern Nebraska by late afternoon. Several weak (EF0) tornadoes touched down in open areas, including the tornado captured by Tim Wolfe 14 miles south of North Platte (shown right). The tornadoes were so close to the NWS office at one point, tornado confirmation was a matter of looking southwest from the office. Some training of thunderstorms produced extensive hail damage over the North Platte community and widespread street flooding occurred on the west side of town. As thunderstorms moved northeast, heavy rainfall and hail reports continued to come in, the largest the size of baseballs which were reported in Custer and Wheeler counties.

Photo courtesy of Tim Wolfe

On **April 15th**, two more weak tornadoes occurred in Wheeler County. At 1:05 p.m., a tornado touched down 5 miles northeast of Ericson, where a pole barn sustained heavy damage and a second larger outbuilding had a canvas roof destroyed. The second tornado briefly touched down nine miles north northeast of Bartlett with no damage reported. Both tornadoes were rated EF0.

A few small events occurred May into June, although by late June high based thunderstorms became the norm. The scarcity of moisture resulted in a couple of wind events including **June 22nd** as winds peaked at 70 mph at Broken Bow. A second wind event occurred on **June 29th** as winds topped 78 mph, producing widespread storm damage at Callaway, Arnold and Broken Bow.

Isolated severe thunderstorms produced weak (EF0) tornadoes on **July 17th and 18th**. The tornadoes briefly touched down over open range land with no damage reported. The last tornado for the season was reported **September 30th** when a non-supercell tornado developed about 3 miles northwest of Arnold in Custer County. The tornado's condensation cloud could be seen for miles before it roped out and dissipated.

Photo Courtesy Regina Loewe Braun - Fairfield Creek Fire

The heat and lack of moisture this summer created an above normal fire season. On **July 20th**, dry-lightning ignited a large wildfire in the vicinity of Fairfield Creek along the banks of the scenic Niobrara River. Additional thunderstorm activity added to the challenges of area fire fighters, as daytime temperatures soared above the century mark and gusty winds fanned flames.

Dry-lightning ignited numerous wildfires in 2012. Larger wild fires across the Sandhills region included the Welnitz Fire, Korty Creek Fire, and the Fairfield Creek Fire that was later renamed Region 24 Wildfire.

2012 Nebraska Severe Weather Summary

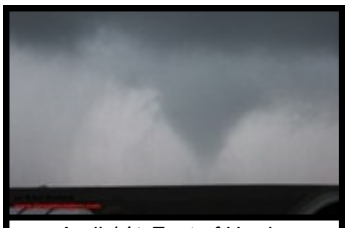
http://www.weather.gov/gid

South Central Nebraska - NWS Hastings, NE

A rare set-up for severe weather across the Central Plains produced first-ever documented February tornadoes in Nebraska and started off the 2012 severe weather season on the **28th**. In Greeley County, an EF-0 tornado with estimated 70 mph winds tracked along a very short path 4 miles west of Greeley, overturning an irrigation pivot.

February 28th funnel cloud near Greeley. Photo courtesy of Tim Marquis.

March was a quiet month across the area, and ended up as one of the warmest on record, but by mid-April severe weather would strike again. **April 14th** would bring one of the busiest severe weather days to the coverage resulting in a twelve hour episode of strong to severe thunderstorms. It was an early start to the event, with the first severe thunderstorm warnings being issued before 11 a.m., after which severe weather warnings continued into the late evening. One of the first storms of the day, affecting parts of Sherman, Valley and Greeley Counties, was a prolific hail producer, with baseball size hail causing considerable damage to homes and vehicles, especially northwest of Spalding. Wind gusts estimated at 70 mph toppled irrigation pivots near Campbell and Clay Center.

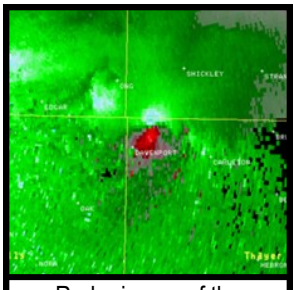


April 14th East of Hardy. Photo courtesy of Brian Onstead.

Four brief EF-0 tornadoes were also confirmed. The first three tornadoes occurred in the mid-afternoon in Nuckolls and Thayer Counties. One of the three twisters struck a farm just north of Alexandria in Thayer County, where a grain bin was toppled and a roof torn off of a shed. A few hours later, the fourth and final tornado touched down shortly after 6 p.m. in northeast of Oxford in Harlan County, destroying a grain bin.

Additional weak tornadoes were reported the very next day, **April 15th**. A small supercell storm tracked from southwestern Sherman County into eastern Valley County, with two brief EF-0 tornadoes touching down near mid-day. The first tornado struck a farmstead between Litchfield and the Custer County line, destroying a metal outbuilding and doing minor damage to a home. The second tornado touched down five miles southeast of Ord, but was brief and caused no damage.

The evening of **May 1st** featured a cluster of hail producing supercell storms primarily affecting eastern portions of the area, including Hamilton, York and Polk Counties. There were several reports of heavy rain and nickel to quarter size hail, with ping pong ball size hail reported near Aurora, York and Gresham.



Radar image of the tornado near Davenport.

May 2nd, brought heavy rain, very large hail and yet another tornado. The lone confirmed tornado, which was rated EF-1 with estimated 105 mph winds, struck shortly after nightfall along the Thayer-Fillmore County line. Along its one mile path, a farmstead northeast of Davenport sustained house, garage and vehicle damage and a grain bin was destroyed. Large hail fell in the Hastings area, including at the NWS Office, and heavy rain of 3 to 4 inches targeted much of Clay and Fillmore Counties, resulting in water running over Highway 6 near Sutton, along with flooding of numerous county roads.

Grain bin damage at farmstead near Davenport.

Though not as intense, **May 3rd** brought additional hail reports from the Republican City and Orleans area, with the largest hail up to baseball size northwest of Republican City.

2012 Nebraska Severe Weather Summary

http://www.weather.gov/gid

South Central Nebraska - NWS Hastings, NE Con't.

May 4th was the fourth consecutive day of severe weather, this time targeting northern areas. Nearly two dozen reports of large hail ranging from quarters to baseball size were received, and while most affected rural areas, St. Paul took a direct hit with at least 20-30 minutes of hail. No serious injuries were reported, but two teenage girls sheltered in a car, with one sustaining several small cuts when the back window shattered. Damaging winds and large hail returned on **May 19th**, along with numerous funnel clouds and gustnadoes also reported. More significant wind damage occurred in the Hardy and Ruskin areas of Nuckolls County, where winds near 75 mph overturned irrigation pivots, downed power poles and caved in several seed storage tanks. The last week of May would bring a few more severe weather events, with the first coming on **May 23rd**. A parade of thunderstorms produced large hail and estimated wind gusts to 70 mph along a corridor stretching from Furnas County to Nance County. Memorial Day weekend, specifically **May 27th**, featured a prolonged outbreak of severe weather, primarily over the eastern two-thirds of the area. In addition to the dozens of large hail and damaging wind reports, there was one brief EF-0 tornado which touched down between Greeley and Wolbach. There was no damage reported. Hail to golf ball size fell in several locations, including Greeley, Geneva, Franklin, Blue Hill and along Interstate 80 near York. Numerous irrigation pivots were overturned along a 6 mile path south of Wood River, and in town, large trees suffered damage and power poles were knocked down.

After a slow start to June, severe weather returned on the **13th and 14th**. The **14th** would feature the most widespread event of the month. Thunderstorms started during the afternoon hours on both edges of the coverage area, eventually filling in along an advancing cold front. A few of the more notable reports included tennis ball size hail in Glenvil, golf ball size hail and 70 mph winds in southern Furnas County, 70 mph winds in Lawrence and downed trees in the Alma and Orleans areas. Slow moving thunderstorms combined with heavy rain allowed for anywhere from 2 to 4.5 inches to fall, mainly southeast of Hastings, and resulted in county roads underwater in Clay County and flooding was reported along the Little Sandy Creek and Little Blue River. A "unique" high wind event on **June 23rd** ended up being the final event of the month. A line of thunderstorms passed through the area, and interestingly the line itself did not produce a single severe criteria report, but behind the line, southerly wind gusts of at least 50 to 70 mph developed due to the formation of an intense low pressure in the wake of the storms. In some places, these high winds lasted for an hour or more. A wind gust of 66 mph was recorded at the Central Nebraska Regional Airport in Grand Island, 59 mph at the Holdrege Airport and 58 mph at the Lexington Airport. Damage was reported across the area, including small outbuildings destroyed and irrigation pivots overturned near Arcadia and a fireworks tent and trailer blown over in Holdrege.

Thanks to the onset of drought, quiet severe weather conditions would continue right on into August. A few isolated severe events occurred, one being **August 1st** during which 70 mph winds near Hazard destroyed an old barn and damaged another nearby outbuilding. On the **7th**, portions of the northeast corner of the coverage area, Nance, Greeley and Howard Counties, were affected by hail ranging from nickel to golf ball size.

Even with ongoing drought, September brought severe weather at the beginning and end of the month. The first event came on **September 4th**, when wind gusts of 60 to 65 mph were reported in Thayer and Nuckolls Counties, causing roof damage to a building in Superior and knocked down a golf cart shed under construction in Hebron. On **September 6th**, a lone supercell dropped nickel to golf ball size hail along a path extending from near Orleans and Alma in Harlan County to just south of Franklin in Franklin County. On the **30th**, quarter size hail fell near Cozad in Dawson County.

Just like the start of the severe weather season for South Central Nebraska was unusually early, the end of the season came pretty late in the year. On **November 10th**, a fairly widespread coverage of thunderstorms produced mainly small hail and sub-severe wind gusts. The exception were a handful of severe-criteria reports highlighted by half dollar to golf ball size hail in eastern Howard County and a measured 64 mph wind gust near Red Cloud.

2012 Nebraska Severe Weather Summary

http://www.weather.gov/oax

Eastern Nebraska - NWS Omaha, NE

Heat and expanding drought basically shut-off the 2012 severe weather season in eastern Nebraska toward the end of June with the bulk of the severe weather occurring in April and May. In total, there were 14 tornadoes in eastern Nebraska in 2012; nine in April, four in May and one in August. Most of the tornadoes were weak and short-lived (EF0 or EF1) but 2 were strong (EF2s). The first EF2 tornado touched down near Cook on April 14th and tracked nearly 6 miles significantly damaging a house besides causing other damage. The other EF2 tornado touched down on May 24th near Cornlea, which is north of Columbus. Although this tornado was on the ground for under 1 mile, it nearly destroyed a farm house when it lifted the roof off the house causing several walls to collapse.

The 2012 severe weather season in eastern Nebraska essentially began on **March 29th** when several severe thunderstorms produced large hail, with up to baseball-size hail reported near Falls City. The most active day of the year was on **April 14th** when a large upper level system moved across the plains causing a strong warm front to lift north into eastern Nebraska. Besides spawning 7 tornadoes that day, a few severe storms north of the warm front produced large amounts of hail. The most notable of these storms was one that hit the Norfolk area around midday on the 14th. This storm dropped hail up to golf ball-size and was accompanied by 50 mph wind gusts and very heavy rainfall, in some cases unofficially up to 5 inches. Besides causing vehicle and structural damage around town, the hail drifted several feet deep in some locations which clogged storm drains and had to be cleared by snow removal equipment. The hail-clogged storm drains and heavy rain in turn caused flash flooding in parts of Norfolk. This flooding included the emergency entrance to the hospital where a clogged drain allowed water to build up against the steel door which eventually collapsed sending water into the emergency room. This caused the relocation of the emergency entrance and prompted the moving of a few patients.

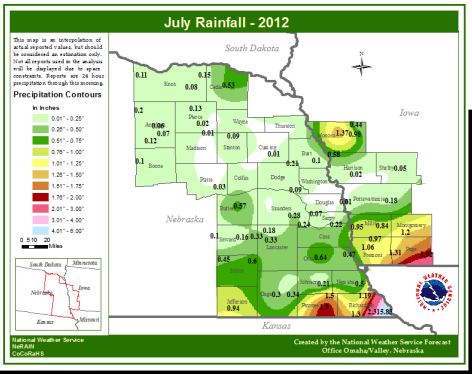
Several severe weather episodes occurred during May, including a low-topped super cell thunderstorm which spawned the tornado north of Columbus on **May 24th**. On **May 23rd** a severe thunderstorm dropped large hail on the NWS office near Valley causing extensive damage to employee's vehicles. This marked the 2nd year-in-a-row that a hail producing storm caused extensive damage to vehicles at the office. Earlier in the month, on **May 6th**, a severe thunderstorm produced 77 mph winds at Offutt AFB causing tree and some building damage in the area.

Severe weather episodes began decreasing during June with about the last day of the season to see relatively widespread severe weather and heavier rain occurring on **June 14th**. After June 14th rainfall and severe weather became spotty as excessive heat and expanding drought took hold of the plains. However, one storm produced a weak tornado in Dodge county on **August 8th**. The severe weather season ended on **November 10th** when several severe thunderstorms produced hail and strong winds from around Columbus toward Beatrice.

Interesting Fact for 2012 - The summer of 2012 was quite a year for lack of rainfall. July 2012 will go down in the record books as the ***driest July on record for the Omaha area***, with only 0.01 inches of rain. **Lincoln** reported 0.33 inches of rain, ***which makes it the second driest July on record***, with the driest being 0.08 in 1936. **Norfolk** reported only a trace of rain during the month, making it the ***driest July on record*.**

By year's end, here were the rainfall departures from normal:

Omaha	Lincoln	Norfolk
-8.01"	-9.81 "	-12.91"



New For 2013 - Impact Based Warnings

In 2011, a massive EF-5 tornado literally split the city of Joplin, Missouri in half. Over 150 people were killed; another 1,100 injured and property damage was estimated at nearly $3 billion. While there isn't much we can do for homes or possessions when a tornado strikes, we can protect ourselves. However, all too often, people don't heed the warning information or just choose to ignore it. Why is that? What could be done to improve warning response?

Beginning April 1st, the National Weather Service (NWS) offices which serve the state of Nebraska will begin participating in a project called "Impact-Based Warnings" or "IBW" for short. An "Impact-Based Warning" isn't a new warning product, but actually just slight changes to our existing Tornado and Severe Thunderstorm Warnings. The changes will be most noticeable to the people who actually read the warning and relay the information to the public; such as the broadcast media, Emergency Management and local Dispatch offices. The purpose of an "Impact-Based Warning" is to provide more information about the potential impacts a tornado may cause.

There are 3 main areas of emphasis when it comes to "Impact-Based Warnings". The first is clear information in the tornado warning text of what the hazard actually is. This information will be front-and-center near the top of the warning next to a bullet labeled ***"hazard"***. Below the hazard bullet will be information about the ***"source"*** of the report. Only two sources are possible; radar indicated or the tornado was observed. In the case of an observed tornado, the source information will include who actually observed the tornado (law enforcement, public, etc.). Finally, right below the source information will be ***"impact"*** of the tornado. Wording in this section is designed to more clearly convey just what damage the tornado may do, such as the level of possible destruction. While not an attempt to predict tornado intensity, those impacts can range from minor house damage to complete destruction of a structure. Information about impacts to the power grid, vehicles, mobile homes and trees will also be mentioned. The intent is to more clearly convey what the possible impacts a tornado may inflict and, in turn, illicit a societal response which will be more appropriate for a given situation (i.e., go to a storm shelter).

There is no perfect way to characterize and communicate the risk of a hazard weather event. "Impact-Based Warnings" give the NWS another tool in the arsenal to meet our mission of "protecting the lives and property of the people of the United States of America".

An example (below) of the supplemental information added to tornado warning text products this year:

Hazard: Damaging Tornado
Source: Law enforcement reported a damaging tornado
Impact: Major house and building damage likely and complete destruction possible. Numerous trees snapped. Major power outages in path of tornado highly likely. Some roads possibly blocked by tornado debris. Complete destruction of vehicles likely.

In addition to the changes in the body of the warning text, short "tags" will be added to the bottom of the warning message for users to quickly evaluate the source and impacts. The "source" tag will either be "observed" or "radar indicated". The NWS knows an "observed" tornado report often carries more weight than a radar indicated tornado. A second tag will be used, but only for more significant tornado events. This tag is aligned with the new "impact" statement in the warning text. For most tornado warnings, this tag will not be included. This tag will only be added at the bottom of the warning for more significant tornado events, or for events that have already or will cause major damage and societal impacts. This tag will either be "considerable" or "catastrophic". In all honesty, most of us will go our entire career and never see the "catastrophic" tag. Such a tag is reserved for large, deadly tornadoes akin to a tornado emergency situation. From time-to-time, the "considerable" tag may show up in cases where damage has occurred or a tornado is likely to cause significant damage and major societal impacts.

Central Plains Severe Weather Symposium and Family Weatherfest

University of Nebraska - Lincoln's 13th Annual Family Weatherfest and Central Plains Severe Weather Symposium

Saturday, April 6, 2013
9 a.m.- 2 p.m.
3310 Holdrege St.
Hardin Hall - East Campus
Lincoln, Nebraska
Hosted by
UNL's School of Natural Resources

The Central Plains Severe Weather Symposium (CPSWS) began in Lincoln in 2000, and is a free public event open to the public with information for all ages. CPSWS events are organized by the High Plains Regional Climate Center, UNL's School of Natural Resources and the Lancaster County Office of Emergency Management as a combined effort to increase severe weather awareness. It is the commitment of CPSWS to create an outlet that puts severe weather information into as many homes and businesses in the region as possible.

The CPSWS has been able to bring together broadcast meteorologists from all major local network broadcast stations on an annual basis. CPSWS encourages the media's responsibility to the public in disseminating severe weather information. The CPSWS is closely tied to the efforts associated with Nebraska Emergency Management's Severe Weather Awareness Week.

The underlying theme for all CPSWS events is: "Surviving the Storms". Exhibitors and Severe Weather Experts are brought in each event to touch upon this theme and its varying aspects. One unique aspect of the CPSWS has been its ability to bring together different organizations and agencies under one roof to promote its underlying theme.

In an effort to keep the event a free event, the CPSWS has been sponsored by several businesses and organizations since the beginning. CPSWS has always been, and will always remain, a free public event in order to reach as many people as possible.

For more information, please visit:

http://www.cpsws.unl.edu/

WEATHERFEST

CPSWS
Central Plains Severe Weather Symposium